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Research paper



Marketing Planning in Housing Construction

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Abstract

The construction company marketing planning process considering market possibilities under optimum using of the available resources is being investigated in the article. Usage of the General Electric corporate method at the marketing strategic planning level is considered. The improvement of General Electric approach with the help of the factors importance calculating by hierarchy method which makes strategic assessment more precise is suggested in the article. The list and hierarchy of factors have been received based on two-stage expert enquiry by L.S. Shkolnik «erector» method. At the level of tactical planning the method of linear programming is applied to optimize the use of resources. The offered methods enable making strategic business estimation more exact, and to spend resources of the organization with maximum efficiency at strategic plans implementation .

Keywords: *housing construction, linear programming, marketing planning, marketing strategy.*

1. Introduction

Any country is interested in stable development of the housing sector which enables maintaining social stability in a society, provides employment of a considerable part of the population and is an important sphere of business activity. In terms of developed market economy about 20% of gross domestic product is invested into this sphere [3;8]. Arrangement of conditions for housing sphere development in Ukraine, where the housing problem is traditionally one of the sharpest in the social plan is especially important.

Today economic situation in the country has led to the fact that activity of the majority of construction organizations is directed only to the solving survival problem. Only a few construction enterprises are oriented not only to survival, but to perspective development. The main objective of construction business strategy is achieving long-term competitive advantages which will provide survival, steady functioning and development of the enterprise in the foreseeable future.

The analysis of construction business domestic and foreign experience shows that most effective "philosophy" of modern business is the concept of marketing that regards requests of consumers as of paramount importance [4; 15]. The necessity of unified implementation and interrelation of strategy and tactics of active adaptation to requirements of potential buyers with simultaneous purposeful impact on them follows from essence of marketing.

According to researchers, the main problematic questions related to construction, which are connected to implementation of marketing plans, are as follows: studying of a state and dynamics of demand for construction products at all stages of its lifecycle; providing high degree of civil production to market requirements; the maximum possible using of production capacities and active impact on buyers credit worthiness. [11].

2. Statement of the Main Material.

We will consider the process of marketing planning on the example of LLC "Evrobud SM", the Construction and Investment Company, which works at the market of housing and commercial construction in Poltava. At present the company can implement the project of any complexity and provides a complete cycle of investment construction works: creates the concept of future object; designs and performs construction; puts ready objects into exploitation; has its own plant of concrete products that enables making designs under requirements of the developed projects. LLC "Evrobud SM" offers in the housing market such types of construction products (percentage of the created cost) [12].

1) construction of multi-stored blocks of flats - 50%;
2) construction of blocks of flats with average number of stores - 10%;
3) construction of low (detached) apartment houses - 30%;
4) production of frameworks for sale - 10%.

The decision concerning managing a firm's business portfolio including development of independent strategy for each type of activity (strategic business unit) is made at the level of marketing strategic planning [18]. Marketing enables defining priorities in civil engineering firm resource allocation. The General Electric corporation has developed a model, which estimates condition of a separate strategic business unit in categories of market attractiveness and business performance, taking into account the statement about equally ineffectiveness of a strong business at unattractive market, and weak business at attractive one. Only effective business atn the attractive market will be successful [7]. The method of General Electric assumes that developers of the strategic plan define estimation factors and their importance, proceeding from features of the market and company business specifics [14].

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To determine the list of factors by means of which market attractiveness [5] and business performance of LLC "Evrobud SM" will be estimated, the expert focus group of 8 people consisting of representatives, planned treasury division and company marketing department was created. For enhancing the experts' opinion assessment objectivity, "L.S. Shkolnik designer" enquiry method after the psychologist Leonid Semenovych Shkolnik was used. The essence of the approach consists in two-stage enquiry. At the first stage experts create the list of factors, at the second – a sheet on which factors are written down, cut on strips. Each of the strips contains only one factor. Then experts are supposed to distribute these factors in order of importance from their point of view. Sometimes it makes sense to make from «erector» different hierarchy of factors for the different markets.

Proceeding from the conducted expert survey of the enterprise authorities representatives, market attractiveness of LLC "Evrobud SM" is defined by the following factors:

1. Total market volume;
2. Growth market rates (per annum);
3. Profitability;
4. Competition intensity;
5. Engineering requirements to construction products;
6. Environment influence;
7. Maintenance conditions (L);
8. Interaction with authorities

Thus, the used method of enquiry of experts allowed to estimate relative importance of factors in addition. We suggest to define the importance of factors in a matrix of General Electric by a method of hierarchies [1; 15; 17], having made matrixes of paired comparisons for each market separately (see matrixes 1 – 4).

Table 1: Matrix 1: defining the importance of estimation factors for the multistoried residential apartments' construction market

j / i	Total market volume	Growth Market Rates (per annm)	Profitability	Competition Intensity	Engineering requirements	Environment influence	Logistics conditions	Interaction with authorities	Amount	Factor Importance ð
Total market volume		2	3	2	3	2	3	1	16	0,14
Growth Market Rates (per year)	2		2	2	3	3	1	3	16	0,14
Profitability Intensity	1	2		2	3	3	3	3	17	0,15
Competition Intensity	2	2	2		2	2	3	3	16	0,14
Engineering requirements	1	1	1	2		2	2	3	12	0,10
Eenvironment Influence	2	1	1	2	2		1	2	11	0,09
Logistics conditions	1	3	1	3	2	3		3	16	0,14
Interaction with Authorities	3	1	1	3	1	2	1		12	0,10
Amount									116	1,00

It will enable giving more exact assessment to the estimated factors. In a matrix of paired comparisons the estimated factors are located across and down. Comparison of indicators is carried out line by line on three points system.

If the compared factor is more important than the one it is compared to, then in the corresponding cell of a matrix we put 3 points, if it is less important – 1 point, if factors are equal – 2 points. For example, the total amount of the market is compared to growth rates of the market (per annum): if their importance is identical we put 2 points in the corresponding cell of a matrix 1. By the same technique we put down points for the following types of products of this enterprise, namely construction of buildings of average number of stores, construction of low-rise buildings and production of frameworks for sale.

Table 2: Matrix 2: defining the importance of estimation factors for the average number of stores residential apartments' construction market

j / i	Total market volume	Growth Market Rates (per annum)	Profitability	Competition Intensity	Engineering requirements	Environment influence	Logistics conditions	Interaction with authorities	Amount	Factor Importance ð
Total market volume		2	3	3	3	3	3	3	20	0,18
Growth Market Rates (per annum)	2		1	2	2	3	2	2	14	0,13
Profitability Intensity	1	3		2	3	3	2	3	17	0,14
Competition Intensity	1	2	2		2	2	3	3	15	0,13
Engineering requirements	1	2	1	2		2	1	2	11	0,10
Eenvironment Influence	1	1	1	2	2		1	2	10	0,09
Logistics conditions	1	2	2	1	3	3		2	14	0,13
Interaction with Authorities	1	2	1	1	2	2	2		11	0,10
Amount									112	1,00

Table 3: Matrix 3: defining the importance of estimation factors for low apartment houses construction market

j / i	Total market volume	Growth Market Rates (per anum)	Profitability	Competition Intensity	Engineering requirements	Environment influence	Logistics conditions	Interaction with authorities	Amount	Factor Importance ð
Total market volume		2	3	2	3	2	3	1	16	0,14
Growth Market Rates (per annum)	2		2	3	3	3	3	3	19	0,17
Profitability Intensity	1	2		2	3	3	2	3	16	0,14
Competition Intensity	2	1	2		3	2	3	2	15	0,13
Engineering requirements	1	1	1	1		2	2	3	11	0,10
Eenvironment Influence	2	1	1	2	2		1	3	12	0,11
Logistics conditions	1	1	2	1	2	3		2	12	0,11
Interaction with Authorities	3	1	1	2	1	1	2		11	0,10
Amount									112	1,00

Table 4: Matrix 4: defining the importance of estimation factors for the construction market

i	Total market volume	Growth Market Rates (per annum)	Profitability	Competition Intensity	Engineering	Environment influence	Logistics conditions	Interaction with	Amount	Factor Importance ð
Total market volume		2	3	3	3	3	3	3	20	0,18
Growth Market Rates(per year)	2		2	2	3	3	2	3	17	0,15
Profitability Intensity	1	1		1	3	3	3	3	16	0,14
Competition Intensity	1	2	3		2	2	3	3	16	0,14
Engineering requirements	1	2	1	2		2	1	2	12	0,11
Eenvironment Influence	1	1	1	2	2		1	2	10	0,009
Logistics conditions	1	2	1	1	2	3		3	13	0,12
Interaction with Authorities	1	1	1	1	1	2	1		8	0,007
Amount									112	1,00

To assess "Evrobud SM" business performance based on expert enquiry we use the system of the following factors:

1. Market share;
2. Growth rates of a market share;
3. Quality of construction products;
4. Reputation of a firm;
5. Efficiency of work with customers;
6. Efficiency of communications with the consumer;
7. Manufacturability;
8. Production efficiency;
9. Expenditures level;
10. Efficiency of the research works (RW);
11. Management efficiency.

We also define the importance of the listed factors on the basis of the received expert evaluation by means of a matrix of paired comparisons for each type of activity of firm separately (matrixes 5 – 8).

Table 5: Matrix 5: defining the importance of estimation factors for the multi-stored apartment houses construction market

I / J	Market share	Growth rates of a market share	Quality of products	Reputation of a firm	Work with customer	Efficiency of communications	Manufacturability	Production efficiency	Expenditures level	Efficiency of the RW	Management efficiency	Amount	actor Importance
Market share		3	1	2	3	2	2	2	2	1	3	21	0,10
Growth rates of a market share	1		1	2	3	1	1	2	2	3	1	17	0,08
Quality of construction products	3	3		2	3	2	3	2	2	3	2	25	0,11
Reputation of a firm	2	2	2		2	2	1	1	2	2	1	17	0,08
Efficiency of communications	1	1	1	2		2	1	1	1	2	1	13	0,06

Table 5continuation.

Manufacturability	2	3	2	2	2		1	2	2	2	1	19	0,08
Manufacturability	2	3	1	3	3	3		2	3	2	2	24	0,11
Production efficiency	2	2	2	3	3	2	2		3	3	2	24	0,11
Expenditures level	2	2	2	2	3	2	1	1		2	2	19	0,08
Efficiency of the RW	3	1	1	2	2	2	2	1	2		1	17	0,08
Management efficiency	1	3	2	3	3	3	2	2	2	3		24	0,11
Amount												220	1,00

Table 6: Matrix 6: defining the importance of estimation factors for the apartment houses of average number of stores construction market

i / j	Market share	Growth rates of a market share	Quality of products	Reputation of a firm	Work with customer	Efficiency of communications	Manufacturability	Production efficiency	Expenditures level	Efficiency of the RW	Management efficiency	Amount	actor Importance
Market share		3	1	3	3	3	2	2	2	3	1	23	0,11
Growth rates of a market share	1		2	2	3	2	2	3	2	2	1	20	0,09
Quality of construction products	3	2		2	3	3	3	3	3	2	2	26	0,12
Reputation of a firm	1	2	2		2	2	1	2	1	1	2	16	0,07
Efficiency of communications	1	1	1	2		2	1	1	2	2	1	14	0,05
Manufacturability	2	3	2	2	2		2	1	1	3	1	15	0,07
Manufacturability	2	2	1	3	2	3		2	1	3	2	21	0,10
Production efficiency	2	1	1	2	3	3	2		2	3	2	21	0,10
Expenditures level	2	2	2	3	2	3	3	2		3	3	25	0,11
Efficiency of the RW	3	1	1	2	2	2	2	1	2		2	16	0,07
Management efficiency	1	3	2	3	3	3	2	2	2	3		23	0,11
Amount												220	1,00

Table 7: Matrix 7: defining the importance of estimation factors for the low apartment houses construction market

i / j	Market share	Growth rates of a market share	Quality of products	Reputation of a firm	Work with customer	Efficiency of communications	Manufacturability	Production efficiency	Expenditures level	Efficiency of the RW	Management efficiency	Amount	actor Importance
Market share		3	2	2	3	3	3	2	2	3	2	25	0,11
Growth rates of a market share	1		2	1	3	2	3	2	2	3	1	20	0,09
Quality of construction products	2	2		2	3	3	3	2	2	3	2	24	0,11
Reputation of a firm	2	3	2		2	2	1	1	2	2	1	18	0,08
Efficiency of communications	1	1	1	2		2	1	1	1	3	1	14	0,06
Manufacturability	1	2	1	2	2		1	2	1	2	1	15	0,07
Manufacturability	1	1	1	3	3	3		2	2	3	2	21	0,10
Production efficiency	2	2	2	3	3	2	2		3	3	2	24	0,11
Expenditures level	2	2	2	2	3	3	2	1		3	2	22	0,10
Efficiency of the RW	1	1	1	2	1	2	1	1	1		1	12	0,05
Management efficiency	2	3	2	3	3	3	2	2	2	3		25	0,11
Amount												220	1,00

Table 8: Matrix 8: defining the importance of estimation factors for the production of building constructions

i / J	Market share	Growth rates of a market share	Quality of products	Reputation of a firm	Work with customer	Efficiency of communications	Manufacturability	Production efficiency	Expenditures level	Efficiency of the RW	Management efficiency	Amount	actor Importance
Market share		3	1	2	3	2	3	3	2	2	3	23	0,11
Growth rates of a market share	1		3	2	2	3	3	1	2	2	1	20	0,09
Quality of construction products	3	1		2	2	2	3	2	2	3	2	22	0,10
Reputation of a firm	2	2	2		2	2	3	2	1	2	1	19	0,09
Efficiency of communications	1	2	2	2		2	1	1	2	3	1	17	0,08
Manufacturability	2	1	2	2	2		2	2	1	2	1	17	0,08
Manufacturability	1	1	1	1	3	2		2	2	3	2	18	0,08
Production efficiency	1	3	2	2	3	2	2		2	3	2	22	0,10
Expenditures level	2	2	2	3	2	3	2	2		3	2	23	0,11
Efficiency of the RW	2	2	1	2	1	2	1	1	1		1	14	0,05
Management efficiency	2	3	2	3	3	3	2	2	2	3		25	0,11
Amount												220	1,00

Based on the enquiry of experts and consumers we determine degree of market attractiveness and business performance by each type of LLC "Evrobud SM" activity (see tab. 10). For more exact assessment of a business separate performance indicators (quality of construction products; reputation of a firm; efficiency of communications with the consumer) survey of 200 respondents (consumers of construction products) was additionally conducted in social networks. While collection and processing data, the technique of unstructured analysis of cognitive systems in marketing analytics offered in works by P.Chervenk, I. Glavati And., Miklosik A., Lipyanskaia was used [2].

Based on opinion of experts, and feedbacks of respondents-consumers of construction products, point assessment of business performance factors and market attractiveness was defined. As far as annual increase rates of the housing construction market are rather high and conditions of logistics (considering firm's owning a base of building constructions production) are acceptable, we givw these factors estimated point 5. Profitability, total amount of the market, engineering requirements do not meet this enterprise's requirements to the complete estate, therefore experts estimate them at 4 points. Even less satisfactory from the point of market attractiveness view are interaction with authorities and environmental influence, therefore these factors have assessment of 3 points. The most negative factor in the market is the intensity of the competition, for this reason it is estimated at 2 points.

Concerning factors by means of which business performance is defined, the reputation of a firm has the most favorable position among them all with 5 points. Other rather stable indicators include market share, quality of construction products, customer relation and management efficiency, which are estimated by experts and consumers at 4 points. Less satisfactory are such indicators as manufacturability, communication policy, efficiency of research works and expenses, therefore 3 points are given to these factors.

And the least acceptable from the point of business performance view are production efficiency and growth rates of a market share, therefore 2 points are given to them by experts of firm. All these estimates proved to be common for all types of products and the services provided to LLC "Evrobud SM". These data are put in tab. 10 where the most effective activity of the enterprise is defined with the help of them.

Table 10: Determination of business performance and market attractiveness

Factor	Activities of LLC "Evrobud SM".											
	Construction of multi-stored apartment houses			Construction of apartment houses of average number of stores			Construction of low apartment houses.			Production of construction frameworks		
	im po rt an ce	en	al	im po rt an ce	en	al	n	e	l	n	e	l
Market attractiveness												
1.Total amount of the market;	0,14	4	0,56	0,18	4	0,72	0,14	4	0,56	0,18	4	0,72
2.Growth rates of the market (in a year);	0,14	5	0,70	0,13	5	0,65	0,17	5	0,85	0,15	5	0,75
3.Profitability;	0,15	4	0,60	0,14	4	0,56	0,14	4	0,56	0,14	4	0,56
4.Intensity of the competition	0,14	2	0,28	0,13	2	0,26	0,13	2	0,26	0,14	2	0,28

5.Engineering requirements t construction products;	0,10	4	0,40	0,10	4	0,40	0,10	4	0,40	0,11	4	0,44
6. Influence of the environment	0,09	3	0,27	0,09	3	0,27	0,11	3	0,33	0,09	3	0,27
7. Conditions of mat-rialno-technical supply (MTS)	0,14	5	0,70	0,13	5	0,65	0,11	5	0,55	0,12	5	0,60
8. Interaction with authorities.	0,10	3	0,30	0,10	3	0,30	0,10	3	0,30	0,07	3	0,21
Total:	1,00		3,83	1,00		3,10	1,00		3,67	1,00		3,83

Table 10continuation

Business efficiency												
1. Market share ;	0,10	4	0,40	0,11	4	0,44	0,11	4	0,44	0,11	4	0,44
2. Growth rates of a market share;	0,08	2	0,16	0,09	2	0,18	0,09	2	0,18	0,09	2	0,18
3. Quality of construction products;	0,11	4	0,44	0,12	4	0,48	0,11	4	0,44	0,10	4	0,40
4. Reputation of a firm;	0,08	5	0,40	0,07	5	0,35	0,08	5	0,40	0,09	5	0,45
5. Efficiency of work with customers;	0,06	4	0,24	0,05	4	0,20	0,06	4	0,24	0,08	4	0,32
6. Efficiency of communications with the consumer;	0,08	3	0,24	0,07	3	0,21	0,07	3	0,21	0,08	3	0,24
7. Manufacturability	0,11	3	0,33	0,10	3	0,30	0,10	3	0,30	0,08	3	0,24
8. Production efficiency	0,11	2	0,22	0,10	2	0,20	0,11	2	0,22	0,10	2	0,20
9. Expenditures level;	0,08	3	0,24	0,11	3	0,33	0,10	3	0,30	0,11	3	0,33
10. Efficiency of research;	0,08	3	0,24	0,07	3	0,21	0,05	3	0,15	0,05	3	0,15
11. Manage-ment efficiency	0,11	4	0,44	0,11	4	0,44	0,11	4	0,44	0,11	4	0,44
Total:	1,00		3,35	1,00		3,24	1,00		3,39	1,00		3,39

As follows from the performed calculations, the most attractive position is occupied by production of building constructions. However, this type of activity, from our view point, is inexpedient to be expanded as far as sale of readymade building constructions in the market can strengthen positions of competitors. That is why it is necessary to pay attention to expansion of low apartment houses construction. Strategic positions of LLC "Evrobud SM" activities are visually shown on a matrix of GE (fig.1)

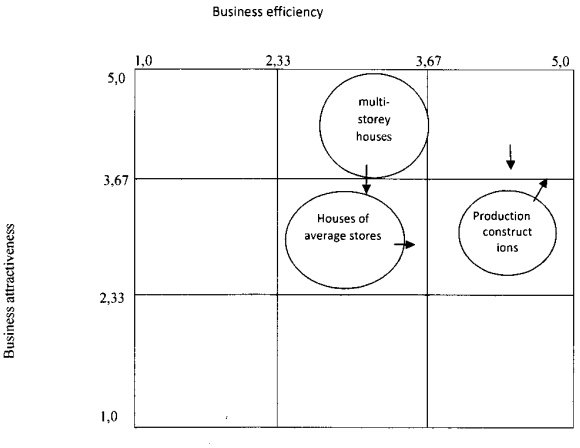


Fig. 1: A matrix of General Electric for LLC "Evrobud SM"

At the tactical level of marketing planning it is necessary to achieve maximum efficiency of the chosen strategic directions of development. The most unsatisfactory assessment at a stage of strategic planning was given to the expenditures level of firm. LLC "Evrobud SM" should use in the most rational way the available resources at unconditional requirements satisfaction of the market. First of all, it is necessary to pay attention to the most valuable resources: the finance and development land which are owned by the company. Planning of operating activities, investment decisions depends on their quantity [10]. For optimal resources distribution, most often it is necessary to make a compromise solution. To find such a decision LLC "Evrobud SM" should use a linear programming mathematical method [6; 13 [7].

Linear programming is widely used optimization method for limited resources usage. It should be noted that the method of linear programming is applicable if only one object is set: to maximize (for example, profit or a market share) or to minimize (for example, expenses).

Using this method of LLC "Evrobud SM" can optimize a firm's resources expenditure and achieve an effective objective, namely, maximize profit on sale of construction products at the given market coverage.

The class of the "new rich" distinguishing themselves in ultrahigh quality requirements of life, in particular, big requests concerning prestigious housing (elite houses and estates) which arose in the last decades can become a new perspective segment of the market of construction products. This market is characterized by the fact that the circle of these consumers is very narrow, but it has almost unlimited requests supported with financial potential [16].

Under such conditions, when there is a limited number of very "profitable" consumers, civil engineering firms face a question of development of new strategy of these consumers demand satisfaction. The marketing researches directed to determination of market potential have to become the first stage. They have to be directed for search of the data about the representatives of local business elite and power structures, which are target market. The key search parameters at selection are as follows: level of income, parental status, owning cars, housing conditions of prospective clients. Marketing researches conducted by us showed that market potential in the existing economic conditions does not exceed 20 possible customers for purchasing elite private households.

LLC "Evrobud SM" developed two standard projects of private estates with a market value of 1,5 million UAH and 2 million UAH, of 0,15 hectares and 0,3 hectares respectively. The company owns the development land in the suburb of Poltava of 3 hectares in size and can invest 15 million UAH in construction. The cost value of standard projects makes 1 million UAH (area of 0,15 hectares) and 1,2 million UAH (area of 0,3 hectares) [12]. To use a method of linear programming the chosen target function is profit maximization.

Options of resources usage:

1. Standard project, 0,3 hectares, worth 2 million UAH (x);
2. Standard project, 0,15 hectares worth 1,5 million UAH (x).

$(2\text{-}1{,}2)\ x + (1{,}5\text{-}1)\ x \rightarrow \max$

$0{,}8\ x + 0{,}5\ x \rightarrow \max$

Restrictions: in investments; in the area of the development land.

Let us write down the limiting dependences:

$0{,}8 = x = 6{,}25,\ x = 7{,}5$

$P = 0{,}8 \times 6 + 0{,}5 \times 7 = 8{,}3$ (one million UAH)

As follows from the calculations which are carried out by us, when building at the available development land of 3 hectares standard estates and maximum investments of 15 million UAH possible for the company, it is possible to get the maximum profit of 8,3 million UAH.

Let us build the area of admissible decisions, so we will solve graphically the system of inequalities. For this purpose we will construct each straight line and we will define the planes set by inequalities (fig. 2).

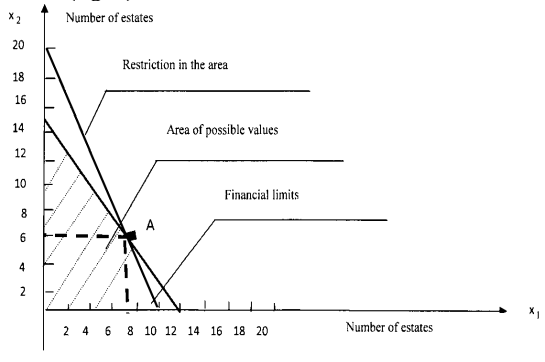


Fig. 2: A matrix of General Electric for LLC "Evrobud SM"

From the drawing it is clear that the shaded area is an area of admissible values of target function, and A point is an optimal solution. This means that for optimum separation of money and land resources between projects it is necessary to use the proportions specified in the figure 2, that is 6: 7 to get the maximum profit.

3. Conclusion

Thus, as shown in example, strategic planning of marketing allows to choose the most perspective types of construction organizations activity (the direction of business). Use of a General Electric corporation method gives the chance of purposeful, based on the analysis of a complex of factors estimation of business strategic perspectives directions. In the article the example of LLC "Evrobud SM" was used to demonstrate choice and assessment of factors by means of which business performance and market attractiveness are calculated for creation a General Electric matrix. To determine the list of factors by means of which market attractiveness [5] and business performance of LLC "Evrobud SM" will be estimated, the expert focus group of 8 people consisting of representatives, planned treasury division and company marketing department was created. The expert method and acceptance of enquiry «erector» by L.S. Shkolnik were used for this purpose. The essence of the approach consists in two-stage enquiry. At the first stage experts create the list of factors, at the second they distribute these factors in order of importance from their point of view. Different hierarchy of factors can be made for the different markets. Improvement of a General Electric method by calculation the importance of factors based on expert enquiry according to method of hierarchies by means of creation a paired comparisons matrix makes factors evaluation more exact. And at the level of tactical planning, application of economic-mathematical methods, in particular a method of linear programming, enable construction organizations using available resources for most effective marketing plans implementation.

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